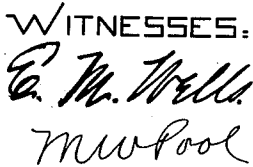


1,010,528.

4 SHEETS—SHEET 1.



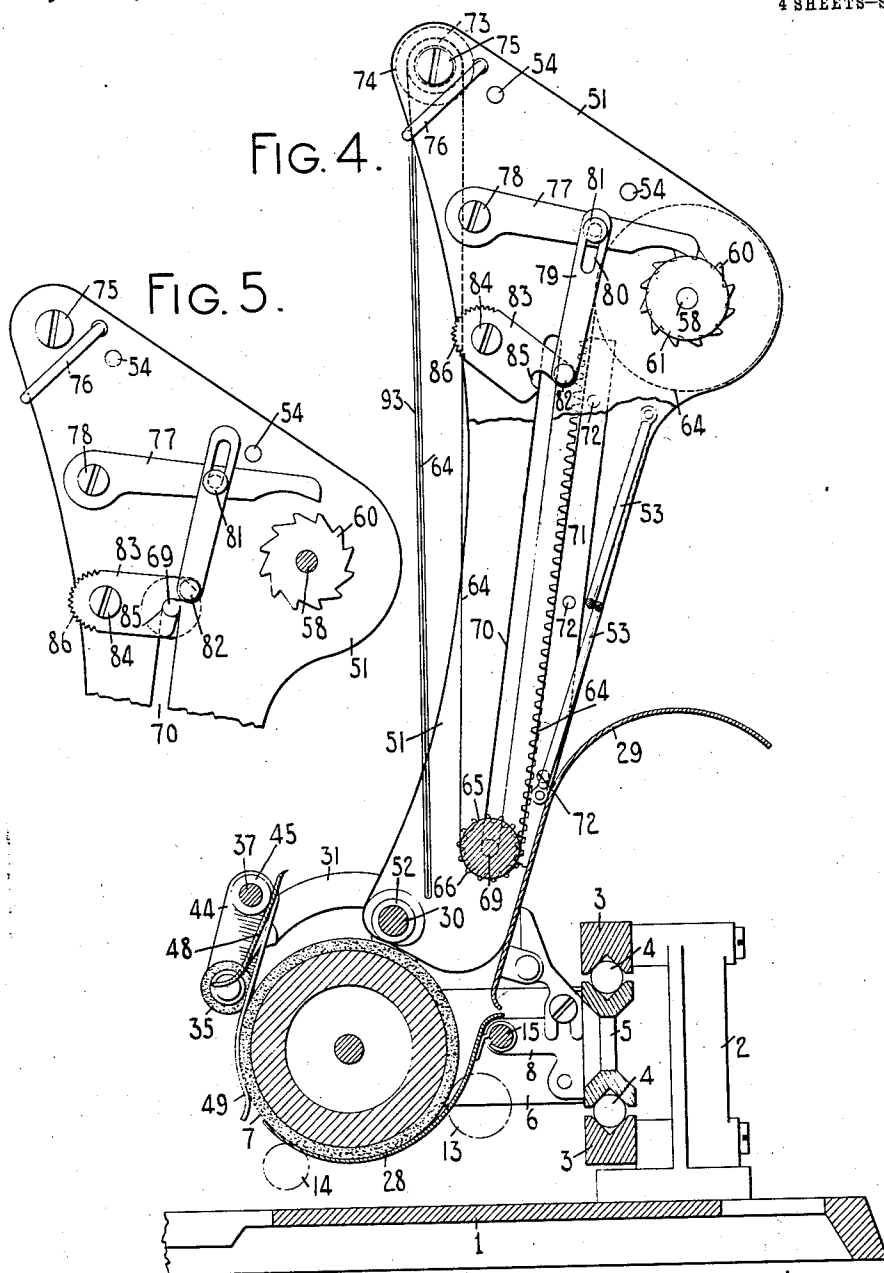
Herbert H. Steele
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H. H. STEELE.
TYPE WRITING MACHINE.
APPLICATION FILED JAN. 25, 1910.

1,010,528.

Patented Dec. 5, 191

4 SHEETS—SHEET 2.



WITNESSES:

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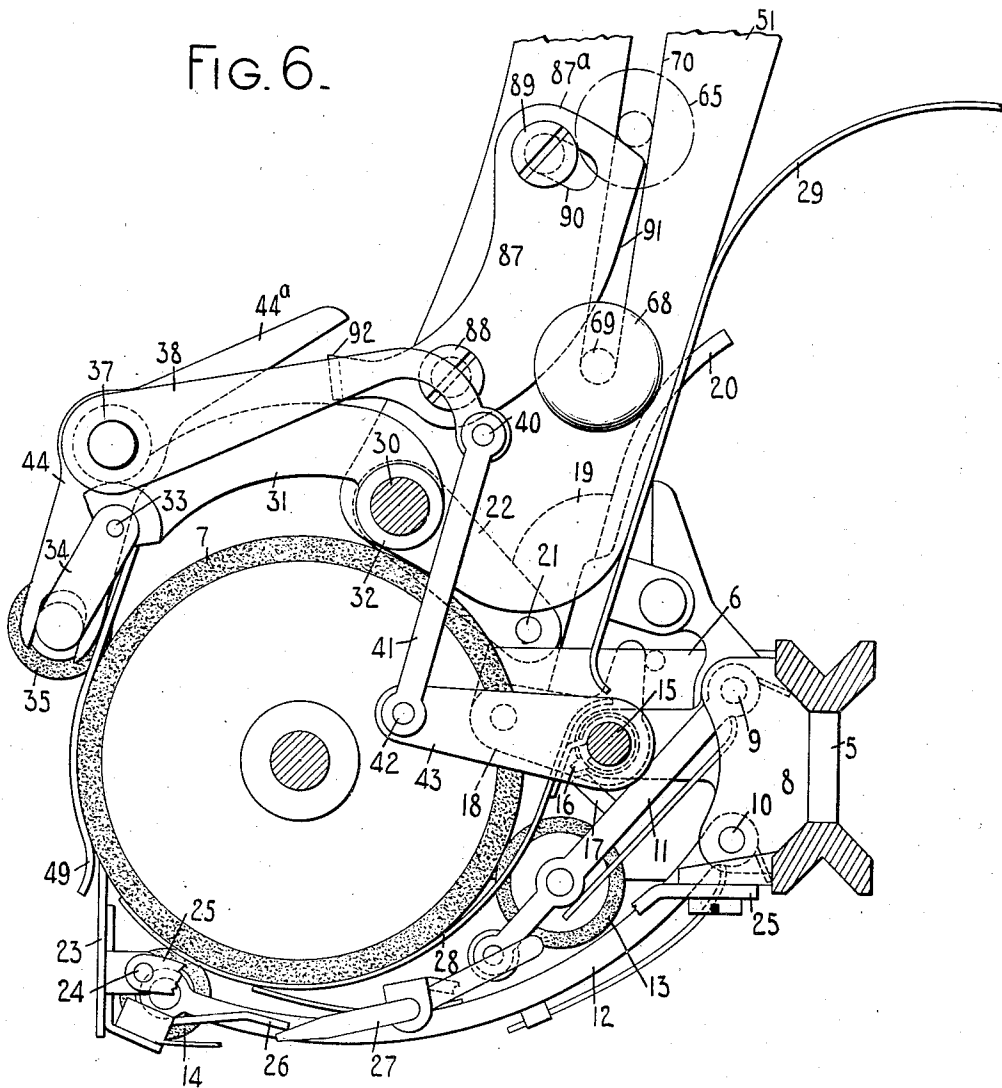
H. H. STEELE.
TYPE WRITING MACHINE.
APPLICATION FILED JAN. 25, 1910.

1,010,528.

Patented Dec. 5, 1911.

4 SHEETS—SHEET 3.

FIG. 6.



WITNESSES:

E. M. Wells.
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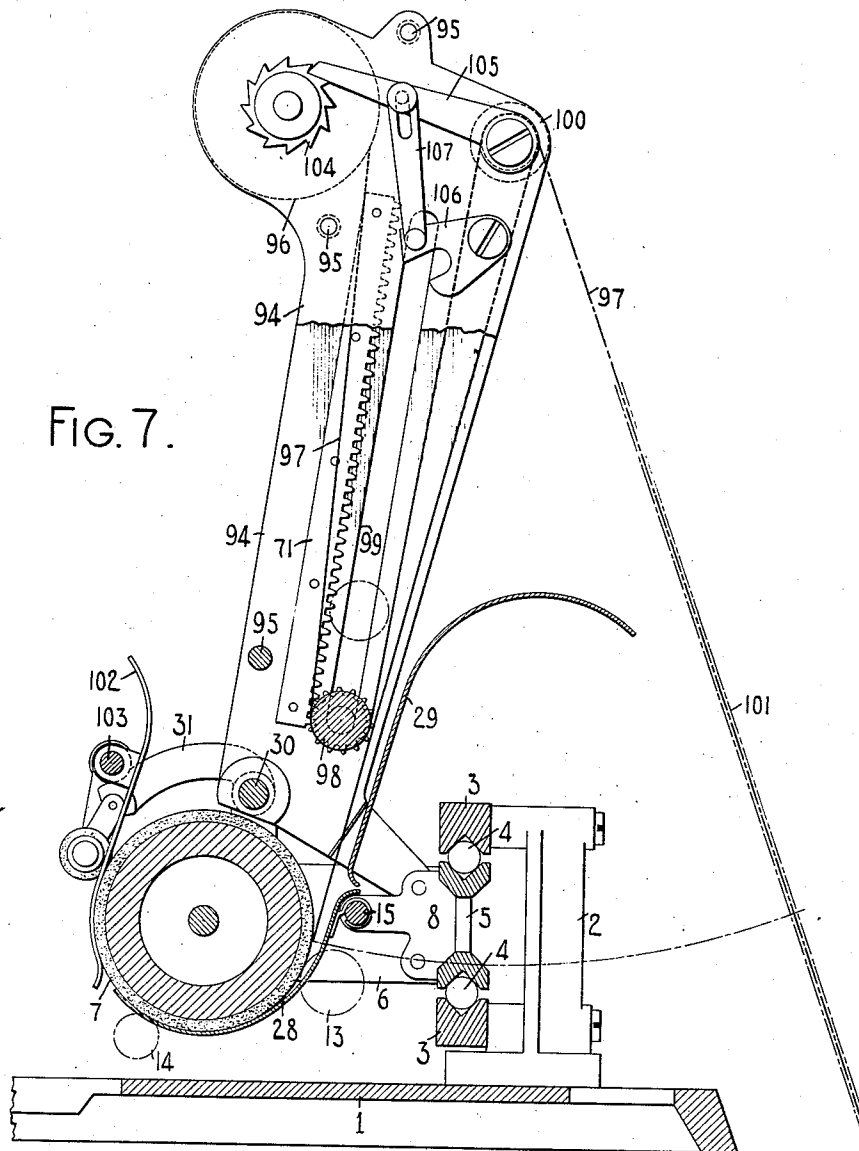
H. H. STEELE.
TYPE WRITING MACHINE.
APPLICATION FILED JAN. 25, 1910.

1,010,528.

Patented Dec. 5, 1911.

4 SHEETS—SHEET 4.

FIG. 7.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HERBERT H. STEELE, OF MARCELLUS, NEW YORK, ASSIGNOR TO THE MONARCH TYPE-WRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,010,528.

Specification of Letters Patent.

Patented Dec. 5, 1911.

Application filed January 25, 1910. Serial No. 539,954.

To all whom it may concern:

Be it known that I, HERBERT H. STEELE, citizen of the United States, and resident of Marcellus, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates especially to means for duplicating copies of typewritten matter and its object generally stated is to provide improved devices of the class specified.

To the above and other ends my invention consists in the features of construction, combinations of devices and arrangements of parts hereinafter described and particularly pointed out in the claims.

My present invention relates to improvements on the constructions disclosed in my prior applications Serial Nos. 528,462 and 536,814. While various features of my said improvements may be made use of in connection with paper webs or work sheets in roll form, yet the illustrated embodiments of my present invention are particularly adapted to folded work sheets which are separately fed to the machine.

Furthermore my invention contains a carbon roll construction which is particularly adapted to long work sheets or work sheets containing more than the average number of lines of typewriting.

Besides these several features, my invention relates to various structural improvements on the prior constructions and which will be more particularly described in connection with the accompanying drawings wherein—

Figure 1 is a front elevation partly in section of the platen and platen carrier of a Monarch typewriting machine embodying my invention. Fig. 2 is a fragmentary front view partly in vertical section of the carbon roll carrier. Fig. 3 is a fragmentary detail view partly in section of an element hereinafter termed a gravity feeding device or roller. Fig. 4 is a side elevation of the upper part of the typewriting machine embodying my invention, parts being shown in section, parts being broken away and parts omitted. Fig. 5 is a fragmentary view like the upper part of Fig. 4 but showing various elements in changed relations. Fig. 6 is a fragmentary side view partly in section of the platen carrier and parts associated

therewith, the section being taken on a plane represented by the dotted line *x* in Fig. 1 and looking in the direction of the arrow at said line. Fig. 7 is a view like Fig. 4 of a modified construction of the invention.

While I have shown my invention as applied to the Monarch typewriting machine it will be understood that said invention may be adapted in whole or in part to other styles of writing machines.

In the drawings, the top plate 1 of the main frame supports standards 2 to which are fixed upper and lower guide rails 3 co-operating with anti-friction balls 4 which also coöperate with the grooved rear or slide bar 5 of a platen frame or carrier further comprising end bars 6, said end bars extending forward and providing a support for a cylindrical platen 7 (Figs. 1, 4 and 6). Slotted lugs or brackets 8 project forward from the slide bar 5 and pivotally support at 9 and 10 pairs of arms 11 and 12, said pairs of arms respectively carrying main and secondary feed rollers 13 and 14. Said feed rollers are constantly spring-pressed toward the platen and are releasable by devices comprising a rock shaft 15 which carries lugs 16 coöperating with lugs 17 on the arms 11. The rock shaft 15 is controlled by manual devices comprising a crank arm 18 fixed to the rock shaft and pivotally connected with a lever 19 provided with a finger piece 20, said lever 19 being pivotally connected at 21 with an arm 22 pivoted to the left-hand end bar 6. When the finger piece 20 is pulled forward it rocks the shaft 15 forward and locks it, thus throwing off the feed rollers and locking them in released position. A scale plate 23 extends lengthwise of the platen below the printing line thereon and is pivotally connected at 24 to arms 25 secured to the slide bar 5. Said scale plate is constantly spring-pressed toward the platen and when the finger piece 20 is pulled forward is automatically released by devices comprising a finger 26, fast on the plate 23, and a lever 27, which lever is actuated by the right-hand arm 11. Other paper controlling devices comprise a spring-pressed paper apron 28 pivoted on the rock shaft 15 and a paper table 29 supported on the slide bar 5. The devices heretofore described are or may be those commonly found in the Monarch typewriter, and therefore need not be described at

greater length. Furthermore the machine is provided with printing instrumentalities and carriage feeding, line spacing and other devices of the usual or other suitable style.

5 Other paper controlling devices cooperative with the work sheets near and above the printing line and particularly adapted to the character of work for which my present improvements were primarily designed, 10 are supported on a paper finger rod 30 which extends lengthwise of the platen above the same and is secured at its ends to the end bars 6. Said devices as shown especially in Figs. 1 and 6 comprise supporting arms 31 15 provided with hubs 32 which surround the rod 30 and are suitably fixed thereto near the ends of the platen. The arms 31 are curved forward over the platen and pivotally support at 33 a roll carrier 34 carrying 20 a pressure roll 35 which is spring-pressed toward the platen, the arms carrying the pressure rolls being off-set inward toward the middle of the machine. The arms 31 which, it will be understood, are rigid on the platen 25 carrier, are formed with hubs or bosses 36 which provide bearings for a rock shaft 37. Said rock shaft as shown in Fig. 1 projects beyond its right-hand bearing 36 and carries a rearwardly extending crank arm 38 having 30 a collar portion 39 which is pinned to the rock shaft. The crank arm, as best appears in Fig. 6, is pivotally connected at 40 with a downwardly extending link 41, the lower end whereof is pivotally connected at 42 35 with a crank arm 43 fixed to and extending forward from the rock shaft 15. By the described means the rock shafts 15 and 37 are connected so that when the rock shaft 15 is rocked forward by pulling the finger 40 piece 20, the rock shaft 37 will be automatically rocked rearward a corresponding extent. Arms 44 having hubs 45 secured to 45 the rock shaft 37 by pins 46 extend downward and are bifurcated at their lower ends to embrace the pins 35^a on which are pivoted the pressure rolls 35. Suitably secured to the hubs 45 and to a central hub 47 on the 50 rock shaft 37 is a member or device 48 combining the functions of a paper deflector and severing blade, its top edge being sharpened for paper cutting purposes and its lower portion acting as a paper guide. Said device 48 extends lengthwise of the 55 platen and has suitably fixed to its ends downwardly extending paper guiding fingers 49 which overlie the scale plate 23 and are slotted at 50 to provide openings through which the pressure rolls 35 may cooperate with the platen.

60 It will be understood that the device 48 and the paper guiding fingers 49 are fixed to the rock shaft so that they turn therewith while the releasing arms 44 which also turn or rock with said rock shaft 37, control the 65 pressure rolls 35 so as to swing them on

their pivots 33 away from and toward the platen when the rock shaft 37 is rocked by the finger piece 20. In other words, the actuation of the finger piece 20 operates to throw off or render inoperative all the paper 70 feeding devices which cooperate with the platen, including the main and secondary feed rollers 13 and 14, scale plate 23, paper fingers 49 and pressure rolls 35.

The paper supply devices including the 75 carbon roll holder are mounted on a supporting frame fixed on and rising from the platen carrier. Said frame comprises two side plates 51, each of which has an inwardly projecting hub 52 which surrounds and is 80 suitably secured to the rod 30. The rear edges of the frame plates 51 may, if desired, be arranged to rest against the paper table 29 as an additional support. Diagonal 85 tie rods 53 connect the frame plates and assist to promote the rigidity of the supporting frame. The head or upper portion of the supporting frame is further connected by a pair of parallel cross-rods 54.

90 Journalled at the upper rear side of the supporting frame is a device or holder for a transfer medium supply roll or carbon roll, the details of said device being clearly shown in Fig. 2. The material carrying 95 device or carbon roll holder proper comprises a tubular core 55 and end flanges 56 having hubs 57 which enter the core and frictionally engage therewith at its ends. A shaft 58 passes through the roll holder 100 proper and provides a support or bearing for the flanges or core pieces 56. Outside the flanges 56, bearing sleeves 59 are arranged on the shaft, said sleeves engaging in bearing openings in the side plates 51. 105 The right-hand bearing sleeve is provided outside the contiguous end plate with a head 60 formed with ratchet teeth for purposes hereinafter described. The end portion of the shaft which projects beyond the gear 110 wheel 60 is threaded and receives a removable thumb nut 61. Outside the left-hand side plate 51 the shaft 58 is reduced and has fixed to it a knurled finger piece or button 62. A thin washer or spacing plate 63 is 115 arranged between the left-hand bearing sleeve 59 and the adjacent flange 56. When the thumb nut 61 is tightened the roll holder, spacing sleeves and shaft are frictionally connected so that they will all turn together as a single element, the spacing sleeves during 120 such turning rotating in the bearing openings in the plates 51. The washer 63 assists to separate the button 62 and the gear wheel 60 so that they will not bind 125 against the outside faces of the plates 51. By removing the nut 61 the shaft 58 may be withdrawn and the material carrier or roll holder proper removed and replaced by one containing a fresh supply. A web 64 of 130 carbon paper or other transfer medium is

wound on the core 55, the loose end of said web or carbon paper 64 being drawn over the top of the roll holder and downward at the front side thereof, passing around and under a gravity device or roller 65 which may be of wood and carries at its ends, as shown in Figs. 1 and 3, gear wheels 66 provided with hubs 67 which are suitably secured in depressions in the ends of the roller 65. To give weight to the roller 65 and also to provide for conveniently handling it and detaching it from and attaching it to the mechanism it is provided at its ends with detachable weighted heads 68 which also serve as finger pieces. Integral with the heads 68 are stems 69 which are threaded near their ends and engage in tapped openings in the hubs 67.

As shown in Fig. 3 there is a space between each gear wheel 66 and the inner face of the adjacent head 68, which space is bridged by a smooth cylindrical portion of one of the stems 69, this portion bearing in an upwardly and rearwardly inclined slot-way 70 in the plate 51, the construction being such that the gear wheel 66 is adjacent the inner face of the neighboring plate 51 while the head 68 is outside said plate. Thus the roller 65 is supported and guided at each end in a slot or track-way 70 and may be moved up and down along said slot-way. Normally, however, the stems 69 rest on the bottoms of the slot 70. In order to control up and down movements of the gravity device or roller 65 and cause it to travel evenly and without skewing, racks 71 are secured by pins 72 or otherwise to the inner faces of the plates 51 parallel with the slots 70 and at the rear side thereof. The gear wheels 66 mesh with these racks 71 so that as the roller 65 moves up and down the gears engage successively with the rack teeth and cause both ends of the roller to move alike, the roller, of course, turning or rotating on its longitudinal axis during bodily up and down movements. The carbon paper 64 passes upward at the front side of the roller 65 and forward over the top of a guide roller 73 which is arranged at the top and front of the supporting frame above and forward of the carbon roll holder. The guide roller 73 may be of wood and at its ends is provided with flanged heads 74, said heads receiving headed shoulder screws 75, the shouldered portions whereof bear in openings at the tops of the end plates 51. The free end portion of the carbon paper 64 hangs straight down from the front side of the guide roller 73 and may be considered as terminating just above the rod 30 as shown in Fig. 4. A U-shaped bail 76 is pivoted on the plates 51 and normally inclines downward and forward, resting against the front edge of said side plates as shown in Fig. 4. This bail coöperates with

the loose end of the carbon paper 64 just below the guide roller 73 and tends to prevent the carbon paper from being jerked off the guide roller during operations herein-after described.

It will be recalled that in my aforesaid prior constructions the carbon roll holder is held normally frictionally locked to the supporting frame. In the present instance the carbon roll holder is adapted to turn freely on the supporting frame but I provide locking devices which normally prevent it from turning to unwind the carbon paper. These locking devices comprise the ratchet head or wheel 60 and a coöperating pawl arm 77 (Figs. 1 and 4) which is pivoted at 78 to the right-hand plate 51 and extends rearward, its tip or tooth engaging with the ratchet wheel 60 at its top so as to hold normally from forward turning the ratchet wheel 60 and the carbon roll holder to which said ratchet wheel is fast. In order to furnish a further supply of carbon paper when exceptionally lengthy work sheets are being written, devices are provided for swinging the pawl 77 up and releasing the carbon roll, said devices in the present instance being automatically actuated by the gravity roller 65 as it nears the top of its guide slots 70. The releasing devices comprise a link 79 provided at its upper end with a slot 80 which engages a headed pin 81 fast on the pawl 77. The lower end of the link 79 is pivotally connected at 82 to an arm 83 pivoted at 84 to the side plate 51. Below the pivot 82 the arm 83 is formed with a slot 85. The top of the arm 83 forward of the pivot 84 is roughened as indicated at 86 so as to provide a convenient means for actuating the releasing mechanism by hand when desired, as when the carbon paper is being initially adjusted.

For purposes presently explained it is desirable initially to reset the gravity roller 65 at a point somewhat above its lowermost normal position. The devices for accomplishing this comprise a gravity locking plate or abutment 87 arranged at the outer face of the right-hand side plate 51 and pivoted thereto at 88. The plate 87 extends upward and rearward so that a greater part of its weight is at the rear of its pivot and it tends to drop down rearward but is restrained by a screw stop 89 which coöperates with a slot 90 at the top of the plate 87. The normal position of the plate 87 is shown in Fig. 6. It will be observed that the top edge 87^a of said plate extends across the slot 70 in the right-hand plate 51 while the rear edge 91 of said plate 87 is curved and inclines upward and rearward across said slot 70, so that when the gravity roller 65 moves upward, the stem 69 will coöperate with the edge 91 to cam

or swing the plate 87 forward on its pivot 88. Forward of said pivot the plate 87 is provided with an extension or tail 92 which is inwardly off-set so that it underlies and
 5 may be engaged and actuated by an extension or finger 44^a integral with and inclining rearward and upward from the right-hand releasing arm 44.

The present embodiment of my invention is particularly adapted to work sheets folded along their top edges, such, for example, as folded freight receipts of the character used by some railway companies. Such a folded sheet is shown in Fig. 4 and numbered 93. Initially with the parts set as in Fig. 4 the folded bill sheet 93 is placed to embrace between its folds the loose end portion of the carbon paper 64, the folded top edge being close up against the end of the carbon paper. The operator next grasps the three folds composed of the two plies or folds of the bill sheet 93 and the intervening carbon paper 64 and draws them downward together. Since the carbon roll is
 25 locked at this time by the pawl and ratchet locking devices, that portion or end of the carbon paper at the roll is held fast and this downward movement of the loose end of the carbon-paper causes the gravity roller 65 to rise in its slot-ways. The right-hand stem 69, during this rise acts against the curved edge 91 of the locking plate 87, coming said plate forward until said stem 69 passes above said edge, whereupon the plate 87
 35 will drop back to normal position by gravity so that the top edge 87^a of said locking plate will substantially bridge the slot 70, providing an abutment or rest for the stem 69 and preventing the gravity roller from dropping back to its lowermost position at the bottom of said slots 70. The gravity roller is held at such a height by the plate 87 that the free end of the carbon paper may be pushed downward with the folded bill sheet
 45 and introduced between the platen and the main feed roller 13 without disturbing the roller 65 or lifting it from its temporary abutment or rest (see the dotted line position of the roller 65 in Fig. 6). This construction enables the work sheets to be conveniently and accurately adjusted without necessity of the operator sustaining the weight of the roller 65 during such adjustment. The work sheets having been thus
 55 brought into the control of the feeding devices, the platen may be turned and the folded bill sheet and interposed carbon fed around with the platen between the same and the feed rollers, paper apron and scale plate, and upward at the front side of the platen beneath the guide fingers 49 and the device or plate 48, which serves as a guide for that portion of the work sheet between the paper fingers.

65 As will be observed from Fig. 1 the lower

edge of the plate 48 is slightly curved or inclined downward from its ends toward the middle of the machine and is also curved forward as shown in Fig. 4. The lower edge is thus adapted to guide the work sheets and prevent bulging thereof between the paper guide fingers. When the folded work sheet and interposed carbon have been advanced to the position for receiving the first line of writing, this may be written in the usual way. The printing instrumentalities during the writing will cooperate with the usual or a suitable ribbon to reproduce the type impressions on the outer face or fold of the bill sheet and with the carbon paper 80 64 simultaneously to reproduce the writing on the inner or underlying fold of the bill sheet, the coated side or working face of the carbon paper being its inner face or that facing the printing surface of the platen. 85 Thereafter the platen may be line spaced and the next line and subsequent lines may be written in the usual way. During the line spacing operations the gravity roller will rise higher and higher in the guide 90 slots 70, approaching the upper ends of the slots.

It will be understood that in the course of completely filling in any bill sheet it may be necessary to remove it from the machine and re-introduce it from time to time as entries are to be made thereon. When the items on the bill sheet for any one time have been completed and it is desired to remove the sheet and introduce another, the operator pulls forward the finger piece or handle 20, thus releasing the various paper controlling devices, as has been explained, so that the folded work sheet may be freely drawn forward around the platen and removed at the front upper side thereof. The releasing operation frees the carbon paper and enables the gravity roller 65 to drop in its slots under the influence of gravity. The drop of the gravity roller retracts the carbon paper, the loose end portion thereof being fed backward over the platen and the guide roller 73, the opposite end or that at the carbon roll remaining locked fast. The releasing operation causes the finger 44^a to swing downward and engage the tail 92 of the locking plate 87, swinging the body of the plate forward on its pivot so that the locking edge 87^a is swung forward, clear of the slot 70. The result is that the gravity 120 drop of the roller 65 continues past the locking plate 87 and is terminated by the lower ends of the slots 70. Consequently the free end of the carbon paper will be drawn back or retracted to the first position just above the rod 30 where the next folded bill sheet may be readily and conveniently arranged to embrace the carbon paper between its folds.

If in the course of the work on any bill 137

sheet it is advanced so far that the gravity roller approaches the tops of its slots 70, the right-hand stem 69 will contact with the upper side of the slot 85 on the pivot arm 83, and as the work sheet is further advanced and the upward movement of the gravity roller 65 continued, the stem 69 will operate to swing the arm 83 upward on its pivot, lifting the link 79 and bringing the bottom of the slot 80 into engagement with the pin 81. Further movement swings the pawl 77 upward on its pivot 78 and disengages it from the ratchet wheel 60. The parts will now be in the position shown in Fig. 5 with the stem 69 seated in the slot 85 and holding the pawl 77 up in its disengaged position, thus leaving the carbon roll free to be turned forward to unwind additional carbon paper during further line spacing operations. After the writing has been completed the paper feeding and controlling devices may be released and the bill sheet withdrawn as usual. The carbon paper will be restored or fed backward by the gravity roller 65 to an extent corresponding with the drop of said roller from the top of its slotways to the bottom thereof, but of course the surplus carbon paper which was fed off the roll holder will have to be rewound thereon by turning it backward by hand.

When through repeated use the advanced section or portion of the carbon paper becomes exhausted, the operator on completing the work on the bill sheet, may release the paper controlling devices and draw out the bill sheet, at the same time holding the gravity roller in its elevated position. The paper controlling devices are then restored to normal position and the exhausted end portion of the carbon paper is severed by pulling it forward against the sharp upper edge of the device or cutter bar 48. Thereupon the releasing devices are operated and the gravity roller is allowed to drop down to normal position, so that the carbon paper may be wound back on the supply roll until the free end registers with or lies just above the paper finger rod 30, as shown in Fig. 4. It will be seen that the invention provides for repeated use of a duplicating sheet without handling in the simultaneous production of a plurality of copies, especially in connection with a bill sheet folded at its top. After completion of course each bill sheet is severed at the fold and the two copies thus provided are made use of in accordance with the particular system in vogue.

Various changes may be resorted to within the scope of my present invention. One example of such changes is illustrated in Fig. 7 which shows a modified construction in which the carbon paper controlling devices are arranged oppositely from the arrangement shown in the prior construction, so that the free end portion of the carbon paper in

the Fig. 7 construction hangs down at the back of the supporting frame instead of at the front side thereof. In the Fig. 7 construction a supporting frame comprising side plates 94 and cross rods 95 is fixed to the platen carrier and extends above the platen, supporting at its top forward side a carbon roll holder 96. The carbon paper 97 is wound on said holder and drawn off at the rear side thereof, extending downward around a gravity roller 98 which is guided by slots 99 in the plates 94. From the rear of the gravity roller the carbon paper is led upward over a guide roller 100 which is arranged behind the carbon roll holder 96. The free end portion of the carbon paper 97 hangs down from the guide roller 100 normally over the paper table 29 so that said portion may be pulled rearward as shown in Fig. 7 behind the paper table to be embraced between the folds of the folded bill sheet 101. Thereafter the three plies of paper are introduced into the machine over the paper table 29 and between the platen and the feed roller 13 and fed around into the control of paper fingers 102 mounted on the rock shaft 103 connected with and controlled by the rock shaft 15. In the modified construction the roll holder is normally locked against unwinding movements by a ratchet 104 and a pawl 105, the pawl being movable from the gravity roller 98 to release the ratchet through devices comprising an arm 106 pivoted on the frame 94 and connected with the pawl by a link 107. The release is adapted to operate similarly to the release in the prior construction and need not be explained in detail. The first described construction in which the free portion of the carbon is accessible from the front of the machine is generally preferable, but the Fig. 7 construction may be useful in some styles of work.

Other changes besides those exemplified in Fig. 7 may be made without departing from my invention.

It will be seen that my present invention provides a device independent of the platen for feeding thereto material which is normally fast at one end, and means including said device for automatically releasing the fast end of said material so that it may be advanced; that the device aforesaid in the present instance is a gravity operated roller which is movable against gravity by the material or carbon paper itself, while the means aforesaid comprise various devices including a pawl and ratchet connected with the material carrier or roll holder and acted on by the gravity roller so that the pawl is disconnected from the ratchet, thus enabling the roll holder to be turned to unwind paper therefrom; that the device or gravity roller is operative to back-feed the paper while the carbon roll is held fast, and is operative also

at another time to release the normally fast carbon roll holder so that material may be advanced therefrom while the gravity roller itself remains bodily stationary, that is, has
 5 no movement of translation; that the gravity roller is an automatically operated back feeding device for a duplicating sheet; that associated with said back feeding device is means for setting, holding or locking it to
 10 permit independent advance of said sheet; that when said device is thus set the advanced portion of the material or sheet may be freely handled so that it may be entered in the machine between the platen and the
 15 paper feeding devices without the operator having to sustain the weight of the back feeding device during such handling and entering; that the means aforesaid for setting said device is in the nature of an automatic
 20 lock, being in the present instance a pivoted gravity-controlled locking plate that is cammed out of the way by the gravity roller as it moves upward and thereafter swings
 25 back into the path of the gravity roller so as to hold it locked against falling, this locking operation taking place after a predetermined extent of upward advance of the gravity roller; and that this pivoted locking plate
 30 or device or lock is adapted to be swung out of the way or rendered inoperative by devices including the finger 44^a controlled by the paper releasing mechanism.

Certain features herein shown are not claimed *per se* as they form in part the subjects-matter of my co-pending applications
 35 Nos. 526,560 and 528,462.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a typewriting machine, the combination of a platen, a device independent of the platen for feeding material relatively
 40 thereto, said material as it is fed being normally held fast from movement at one end, and means including said device for automatically releasing the fast end of said material so that it may be advanced.

2. In a typewriting machine, the combination of a platen, a gravity operated device for feeding material over the platen inde-
 50 pendently thereof, the material as it is fed being held fast from movement at one end, and automatically operating means including said device for releasing the fast end of said material.

3. In a typewriting machine, the combination of a platen, releasable means coöperative with said platen for feeding material
 55 thereover, the end of the material away from the platen being held fast against movement as the material is fed over the platen, and automatically operating means for releasing the fast end of said material, said automatically operating means including a device for
 60 back feeding said material when said releasable means are released.

4. In a typewriting machine, the combination of a platen, releasable means coöperative therewith for feeding material there-
 over; the end of the material away from the platen being held fast against movement as
 70 the material is fed over the platen, and automatic means for freeing the fast end of said material, said automatic means including a gravity operated device for back feeding said material over the platen when said re-
 75 leasable means are released.

5. In a typewriting machine, the combination of a platen, releasable means coöperative with the platen for feeding material
 80 thereover, the end of the material away from the platen being held fast against movement as the material is fed over the platen, and automatic means for freeing the fast end of the material, said automatic means including a device for feeding said material inde-
 85 pendently of the platen when said releasable means are released.

6. In a typewriting machine, the combination of a platen, releasable means coöperative with the platen for feeding material
 90 over the same, the end of the material away from the platen being held fast against movement as the material is fed over the platen, and automatic means for freeing the fast end of the material, said automatic
 95 means including a gravity roller which is operative to feed the material backward independently of the platen when said releasable means are released.

7. In a typewriting machine, the combination of a platen, means for feeding material over said platen, a rotary holder for
 100 said material, devices normally connected to positively prevent unwinding of the material from said holder, and means for disconnecting said devices.

8. In a typewriting machine, the combination of a platen, means for feeding material over said platen, a rotary holder for
 110 said material, devices normally preventing unwinding of the material from said holder, and separate devices for disconnecting certain of said first named devices from said holder.

9. In a typewriting machine, the combination of a platen, releasable means for feeding material over said platen, a rotary
 115 holder for said material, devices normally preventing unwinding of the material from said holder, and other devices for disconnecting said first named devices, said other devices being also operative to back feed the paper.

10. In a carbon roll mechanism for typewriting machines in which the carbon roll is
 125 normally held from turning to unwind the paper, devices operative automatically to release said carbon roll.

11. In a carbon roll mechanism for typewriting machines in which the carbon roll
 130

is normally held from turning to unwind the paper, devices operative automatically to release said carbon roll at one time, certain of said devices being operative at another time to back feed the paper while the carbon roll is held fast.

12. In a typewriting machine, the combination of a platen, means for feeding material over said platen, a rotary holder for said material, devices normally preventing unwinding of the material from said holder, and means operative automatically for rendering said devices inoperative on said holder.

13. In a typewriting machine, the combination of a platen, means for feeding material over said platen, a rotary holder for said material, devices normally preventing unwinding of the material from said holder, and means controlled by the unwound portion of said material for automatically rendering said devices inoperative.

14. In a typewriting machine, the combination of a platen, means for feeding material over said platen, a rotary holder for said material, devices normally preventing unwinding of the material from said holder, a gravity operated feeding device for said material, and means controlled by said gravity feeding device for rendering said devices inoperative.

15. In a typewriting machine, the combination of a platen, means for feeding material over said platen, a rotary holder for said material, devices normally preventing unwinding of the material from said holder, a gravity operated feeding device for said material, said gravity device being movable by the unwound portion of said material as it is fed into the machine, and means controlled by said device for rendering said first named devices inoperative.

16. In a typewriting machine, the combination of a platen, means for feeding material over said platen, a rotary holder for said material, pawl and ratchet devices normally preventing unwinding of the material from said holder, and means for disconnecting the pawl and ratchet.

17. In a typewriting machine, the combination of a platen, means for feeding material over said platen, a rotary holder for said material, pawl and ratchet devices normally preventing unwinding of the material from said holder, and means operating automatically to separate the pawl and ratchet.

18. In a typewriting machine, the combination of a platen, releasable means for feeding material over said platen, a rotary holder for said material, pawl and ratchet devices normally preventing unwinding of the material from said holder, means operating automatically to throw the pawl out of the ratchet, the automatically operating means including a pivoted arm, a link con-

necting said pawl with said arm, and a device operative on said arm and controlled by said material.

19. In a typewriting machine, the combination of a platen, means for feeding material over said platen, a holder for said material, devices normally preventing the feeding of material from said holder, and means controlled by the material itself for rendering said devices inoperative.

20. In a typewriting machine, the combination of a platen, a normally fast rotary material carrying device, means cooperative with the platen for feeding the unwound portion of the material which is between said platen and said device, a gravity device controlled by the unwound portion of said material, and devices controlled by said gravity device for releasing said material carrying device so that material may be fed therefrom.

21. In a carbon roll mechanism for typewriting machines wherein the carbon roll holder is normally fast, a gravity device movable to back-feed the carbon paper and operative also to release the normally fast carbon roll holder so that material may be advanced therefrom while said gravity device is bodily stationary.

22. In a carbon roll mechanism for typewriting machines including a gravity operated back feeding device, devices for normally holding the carbon roll from turning to unwind the paper, said devices being disconnectible by the gravity operated device as it nears the limit of its travel from normal position and reengaging when said gravity operated device drops under the influence of gravity.

23. In a typewriting machine, the combination of a back feeding device operative automatically to retract paper, and means operating automatically to render said device inoperative to retract paper after an advance movement thereof.

24. In a typewriting machine, the combination of a back feeding device for a sheet, means for advancing said sheet against said device, and means for thereafter locking said device so that the advanced portion of the sheet may be free from back pull.

25. In a typewriting machine, the combination of paper feeding mechanism, a back feeding device for a sheet, which device normally maintains the end of the sheet free from the control of the paper feeding mechanism, and means for setting said device to permit the independent advance of the sheet into the control of said paper feeding mechanism.

26. In a typewriting machine, the combination of paper feeding mechanism, a back feeding device for a sheet, which device normally maintains the end of the sheet free from the control of the paper feeding mechanism.

anism, means for advancing said sheet in opposition to said device, and means for thereafter rendering said device inoperative temporarily so that the advanced portion of the sheet may be freely handled and brought into the control of said paper feeding mechanism.

27. In a typewriting machine, the combination of a platen, paper feeding mechanism, a back feeding device for a sheet which normally maintains the free end of the sheet above the platen, and means, after said sheet has been drawn downward toward the platen and the paper feeding mechanism, for holding said device out of operation so that the advanced portion of the sheet may be freely handled.

28. In a typewriting machine, the combination of a back feeding device for a work sheet, and an automatic device operating after said sheet has been advanced a predetermined extent to prevent said back feeding device from back feeding said work sheet the said predetermined extent.

29. In a typewriting machine, the combination of a back feeding device for a work sheet, an automatic device operating after said sheet has been advanced a predetermined extent to prevent said back feeding device from back feeding said work sheet through said predetermined extent, and means for thereafter rendering said automatic device inoperative.

30. In a typewriting machine, the combination of paper feeding mechanism, a back feeding device for a work sheet, an automatic device operating after said sheet has been advanced a predetermined extent to prevent said back feeding device from back feeding said work sheet the said predetermined extent, and means for releasing said paper feeding mechanism and automatically rendering said automatic device inoperative.

31. In a typewriting machine, the combination of a gravity operated back feeding device for a duplicating sheet, means for advancing said sheet and raising said gravity operated device, and means for preventing said gravity operated device from dropping after said sheet has been advanced a predetermined extent.

32. In a typewriting machine, the combination of a gravity operated back feeding device for a duplicating sheet, means for advancing said sheet and raising said gravity operated device, a gravity element for said device operated at a predetermined point in its travel to prevent said device from dropping, and automatic means for rendering said element inoperative.

33. In a typewriting machine, the combination of a gravity operated back feeding device for a duplicating sheet, means for advancing said sheet and raising said gravity operated device, a gravity element for

said device operated at a predetermined point in its travel to prevent said device from dropping, and releasable paper feeding mechanism, said element being automatically moved out of operated position when the paper feeding mechanism is released.

34. In a typewriting machine, the combination of a back feeding device, and a gravity operated element movable by said device in one direction of the travel of said device and operative thereafter to prevent movement of said device in the opposite direction.

35. In a typewriting machine, the combination of a back feeding device, a gravity operated element movable by said device in one direction of the travel of said device and operative thereafter to prevent movement of said device in the opposite direction, paper feeding mechanism, and releasing means therefor operative also to render said gravity element ineffective on said back feeding device.

36. In a typewriting machine, the combination of a gravity operated roller for back feeding a duplicating sheet, and a gravity controlled plate movable by said roller and thereafter operative to prevent return movement of said roller.

37. In a typewriting machine, the combination of a gravity operated roller for back feeding a duplicating sheet, a gravity controlled plate movable by said roller and thereafter operative to prevent return movement of said roller, and paper releasing mechanism operative to move said plate to free said roller.

38. In a typewriting machine, the combination of a gravity operated roller movable in one direction by a sheet of material and operative by gravity to back feed said material, and a pivoted plate movable by said roller out of its path and returning thereafter by gravity to prevent return movement of said roller.

39. In a typewriting machine, the combination of a gravity operated paper feeding roller, a pivoted plate cooperative therewith, a platen, paper feeding means cooperative with said platen, releasing devices for said paper feeding means including a rock shaft, and an arm on said rock shaft cooperative with said pivoted plate to render the same inoperative.

40. In a typewriting machine, the combination of a platen, releasable paper controlling devices cooperative therewith, said devices comprising a rod or shaft, a guide plate thereon extending lengthwise of the platen, paper fingers secured at the ends of said guide plate, and pressure rollers cooperative with the platen through openings in said paper fingers.

41. In a typewriting machine, the combi-

nation of a platen, paper controlling devices cooperative therewith comprising a plate extending lengthwise of the platen, the lower edge of said plate being curved to provide a paper guide, the upper edge of said plate serving as a severing device, downwardly extending paper fingers secured to said plate at its ends, and pressure rollers mounted independently of said paper fingers.

42. In a carbon roll mechanism for type-writing machines, a gravity operated back feeding roller comprising a body portion of wood or the like for cooperating with the paper, and deachable weighted heads at the ends of said body portion.

43. In a carbon roll mechanism for type-writing machines, the combination of a roll holder comprising a core and frictionally connected flanges, a shaft supporting the same provided at one end with a head and at the other end with a thumb nut, spacing sleeves arranged at the ends of said roll

holder and between the same and said head and said thumb nut, a ratchet wheel on one of said spacing sleeves, and a releasable pawl normally engaging said ratchet wheel to prevent the roll holder from being turned to unwind paper therefrom.

44. A carbon roll mechanism for type-writing machines supported on a detachable frame on the carriage and comprising a roll holder on said frame, a guide roller, a gravity roller cooperative with the paper between said guide roller and said roll holder, and a paper controlling bail cooperative with the paper at the opposite side of said guide roller from said gravity roller.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 22nd day of January, A. D. 1910.

HERBERT H. STEELE.

Witnesses:

ANNA T. LYNCH,
HILDA M. PERKINS.